

Appln No. 09/648,191

Amdt date January 12, 2004

Reply to Office action of October 23, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A flat panel display comprising:
  - a faceplate;
  - a backplate combined with the faceplate to form a vacuum tight cell, the backplate having a plurality of electron emission sources;
  - a light emission unit placed within the cell to emit light from the cell;
  - a frame mounted on the backplate, the frame having a support portion maintaining a cell gap between the faceplate and the backplate and an integral support extension extending from the support portion, the integral support extension having opening portions, the electron emission sources being exposed through the opening portions toward the faceplate;
  - a plurality of spacers formed on the integral support extension [[frame]] such that the spacers are positioned at a non-display area within the cell; and
  - a plurality of gate electrodes formed at a surface of the integral support extension [[frame]] with a predetermined pattern, the gate electrodes having opening portions communicating with the opening portions of the frame.
2. (Original) The flat panel display of claim 1 wherein the frame is formed with a photosensitive glass.

Appln No. 09/648,191

Amdt date January 12, 2004

Reply to Office action of October 23, 2003

3. (Currently amended) The flat panel display of claim 1 further comprising a focusing electrode formed on an opposite surface of the integral support extension [[frame]] with a predetermined pattern, the focusing electrode having opening portions communicating with the opening portions of the frame.

4. (Original) The flat panel display of claim 1 wherein the light emission unit comprises:

a plurality of cathode electrodes formed on the backplate within the cell;

emitters formed on the cathode electrodes as the electron emission sources while being placed within the opening portions of the frame;

anode electrodes formed on the faceplate within the cell with a predetermined pattern,; and

a plurality of phosphors formed on the anode electrode.

5. (Original) The flat panel display of claim 4 wherein the emitters are face-emitters.

6. (Original) The flat panel display of claim 5 wherein the emitters are formed with carbon nano-tubes.

7. (Currently mended) The flat panel display of claim 1 wherein the spacers are formed on a one-sided surface of the integral support extension [[frame]].

8. (Currently amended) The flat panel display of claim 1 wherein the spacers are formed on both surfaces of the integral support extension [[frame]] opposite to each other.

Appln No. 09/648,191

Amdt dat January 12, 2004

Reply to Office action of October 23, 2003

9. (Currently amended) The flat panel display of claim 1 wherein the spacers and the frame are integrally formed in a body with the same material.

10. (Currently amended) The flat panel display of claim 7 wherein the integral support extension [[frame]] has holders, and the spacers are fitted within the holders.

11. (Currently amended) The flat panel display of claim 1 wherein [[a]] the support portion is formed at a side [[portion]] of the frame [in a body] such that the support portion fixedly contacts the faceplate.

12. (Currently amended) The flat panel display of claim 1 wherein [[a]] the support portion is formed at a side [[portion]] of the frame [in a body] such that the side portion [[support]] is fitted between the faceplate and the backplate.

13. (Original) The flat panel display of claim 4 further comprising a dielectric layer formed on the backplate except the portions where the emitters are placed.

14. (Original) The flat panel display of claim 13 wherein the dielectric layer is formed with a photosensitive material.

15. (Withdrawn) A method of fabricating a flat panel display, the method comprising the steps of:

forming a plurality of cathode electrodes on a first substrate;

Appln No. 09/648,191

Amdt date January 12, 2004

Reply to Office action of October 23, 2003

forming emitters on the cathode electrodes as electron emission sources;

mounting a frame onto the first substrate, the frame comprising opening portions corresponding to the emitters, a plurality of spacers positioned at a non-display area to maintain a cell gap, and a plurality of gate electrodes formed on a surface thereof;

forming an anode electrode on a second substrate;

forming a plurality of phosphor layers on the anode electrode; and

combining the first substrate with the second substrate to thereby form a vacuum tight cell.

16. (Withdrawn) A method of fabricating a flat panel display, the method comprising the steps of:

forming a plurality of cathode electrodes on a first substrate;

forming emitters on the cathode electrodes as electron emission sources;

mounting a frame onto the first substrate, the frame comprising opening portions corresponding to the emitters, a plurality of spacers positioned at a non-display area to maintain a cell gap, a plurality of gate electrodes formed on a surface thereof, and a focusing electrode formed on an opposite surface thereof;

forming an anode electrode on a second substrate;

forming a plurality of phosphor layers on the anode electrode; and

combining the first substrate with the second substrate to thereby form a vacuum tight cell.

Appln No. 09/648,191

Amdt date January 12, 2004

Reply to Office action of October 23, 2003

17. (Withdrawn) The method of claim 15 wherein the frame is formed through the steps of:

mounting masks having predetermined opening patterns over both upper and lower surfaces of a photosensitive glass one by one;

exposing the photosensitive glass to light through the masks;

heat-treating the photosensitive glass;

depositing an over-etching prevention layer onto the photosensitive glass;

etching the photosensitive glass; and

removing the over-etching prevention layer from the photosensitive glass.

18. (Withdrawn) The method of claim 16 wherein the gate electrodes, and the focusing electrode are formed with aluminum or indium tin oxide through vapor deposition.

19. (Withdrawn) The method of claim 15 wherein the frame is formed through the steps of:

mounting a mask with a predetermined opening pattern onto a surface of a photosensitive glass;

exposing the photosensitive glass through the mask;

heat-treating the photosensitive glass; and

etching the photosensitive glass.

20. (Withdrawn) The method of claim 15 wherein the frame has spacer fixation holders at the non-display area, and the spacers are fitted within the spacer fixation holders.

Appln No. 09/648,191

Amdt date January 12, 2004

Reply to Office action of October 23, 2003

21. (Withdrawn) The method of claim 16 wherein the frame is formed through the steps of:

mounting masks having predetermined opening patterns over both upper and lower surfaces of a photosensitive glass one by one;

exposing the photosensitive glass to light through the masks; and

heat-treating the photosensitive glass.

22. (Withdrawn) A method of fabricating a flat panel display, the method comprising the steps of:

forming a plurality of cathode electrodes on a first substrate with a predetermined pattern;

forming a photosensitive dielectric layer through screen-printing a photosensitive dielectric paste onto the entire surface of the first substrate, and drying the paste;

removing portions of the photosensitive dielectric layer corresponding to a pixel area through partially exposing the photosensitive dielectric layer to light, and developing the light-exposed dielectric layer;

forming electron emission sources at the removed portions of the dielectric layer;

forming a plurality of opening portions at a frame, the frame being formed with a photosensitive glass;

forming a plurality of gate electrodes on a surface of the frame;

forming a plurality of spacers on the frame at a non-display area;

forming an anode electrode on a second substrate;

Appln No. 09/648,191

Amdt date January 12, 2004

Reply to Office action of October 23, 2003

forming a plurality of phosphor layers on the anode electrode; and

forming a vacuum tight cell through mounting the frame onto the first substrate such that the electron emission sources are placed within the opening portions of the frame, and combining the second substrate with the first substrate.

23. (Withdrawn) The method of claim 22 wherein the electron emission sources are formed through the steps of:

screen-printing a carbon nano-tube paste onto the cathode electrodes; and

heat-treating and surface-treating the printed carbon nano-tube paste.

24. (Withdrawn) The method of claim 22 wherein the opening portions of the frame are formed through the steps of:

mounting a mask with a predetermined opening pattern over a surface of a photosensitive glass, and exposing the photosensitive glass to light through the mask;

heat-treating the photosensitive glass to light; and

etching the photosensitive glass such that the light exposed portions are removed from the photosensitive glass.

25. (Withdrawn) The method of claim 22 wherein the gate electrodes of the frame are formed through the steps of:

printing a metallic paste onto the frame with a predetermined pattern such that the opening portions of the frame are exposed to the outside; and

drying and baking the printed metallic paste.